Quick Start Guide

Cisco 7100 Series VPN Router

1. Prepare for Installation
2. Rack-Mount the Router
3. Connect the Router to the Network
4. Connect the Power
5. Start the System

Cisco Systems

1 Prepare for Installation

Note: For detailed hardware installation instructions and safety guidelines, refer to the Cisco 7100 Series VPN Router Installation and Configuration Guide.

Warning Only trained and qualified personnel should install, replace, or service this equipment.

Warning Read the Installation instructions before you connect the system to its power source.

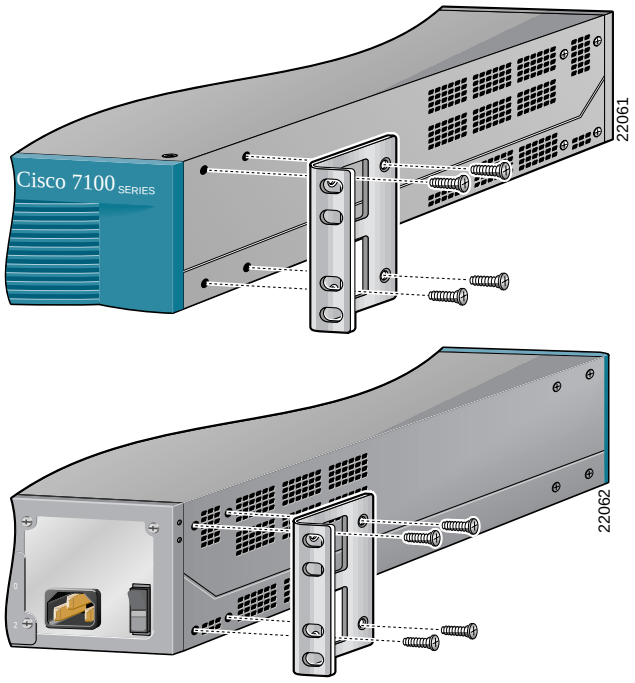
Warning This unit is intended for installation in restricted access areas. A restricted access area is where access can only be gained by service personnel through the use of a special tool, lock and key, or other means of security, and is controlled by the authority responsible for the location.

1. Ensure the site is set up properly and ensure your safety when installing the router:
   - Lift the router safely out of the packing container.
   - Ensure the power service at the site is suitable for the router you are installing.
2. Check the packing slip to ensure that all the proper components are present.
3. Verify that you have the required tools and parts:
   - 19- and 24-inch rack-mount brackets.
   - Four screws for installing the router in the rack (not included).
   - One double ground lug and two Phillips-head machine screws with locking washers.
   - Number 2 Phillips screwdriver (not included).
   - Appropriate cables to connect the router to the network and console terminal.
   - Power cord (two power cords if dual power supply).
   - ESD-preventive wrist strap.

1 Prepare for Installation (continued)

- One grounding wire—6-AWG, 0.162-inch (4.115-mm) diameter, with approximately 0.108 inch (2.743 mm) of insulation, for a total wire diameter of approximately 0.27 inch (6.858 mm). The wire's length is dependent on your router location and site environment. This wire is not available from Cisco Systems; it is available from any commercial cable vendor.
- Crimping tool large enough to accommodate the diameter of the wire receptacle on your grounding lug.
- Wire stripper.

2 Rack-Mount the Router



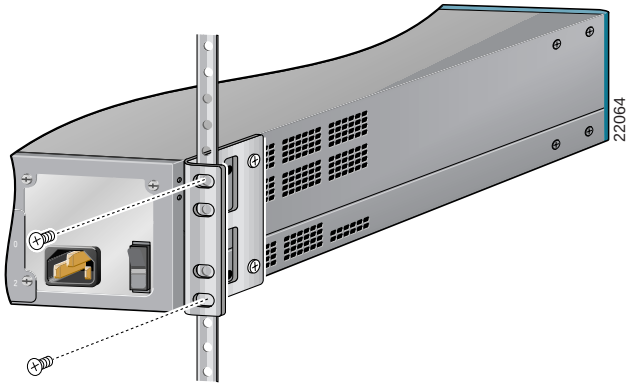
Attach the Brackets to the Router

1. Locate the brackets and screws.
2. Use a Phillips screwdriver to attach the brackets on the side panels of the router in one of the following ways:
   - Front panel forward
   - Rear panel forward

Note: Although these installations show the 19-inch brackets, the procedure is the same for the larger brackets.

Note: This procedure assumes you are installing the router in a rack. For tabletop installation, refer to the Cisco 7100 Series VPN Router Installation and Configuration Guide.

2 Rack-Mount the Router (continued)



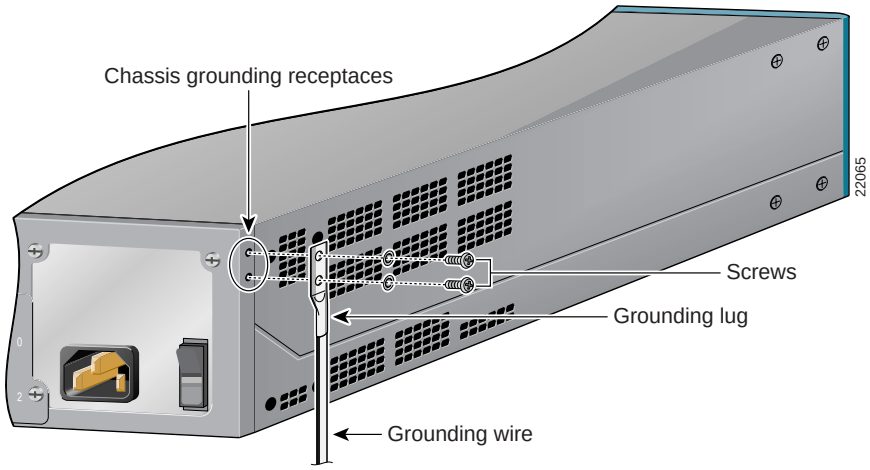
Note: The second bracket attaches to the other side of the chassis. The brackets can also be installed with the front panel forward.

Attach the Router to the Rack

1. Locate the screws to mount the chassis in the rack.
2. Position one person to lift the chassis into the equipment rack.
3. Align the bracket holes with the mounting holes in the equipment rack.
4. Use a Phillips screwdriver to attach the router to the equipment rack.

Warning Do not touch the power supply when the power cord is connected. For systems with a power switch, line voltages are present within the power supply even when the power switch is off and the power cord is connected. For systems without a power switch, line voltages are present within the power supply when the power cord is connected.

2 Rack-Mount the Router (continued)

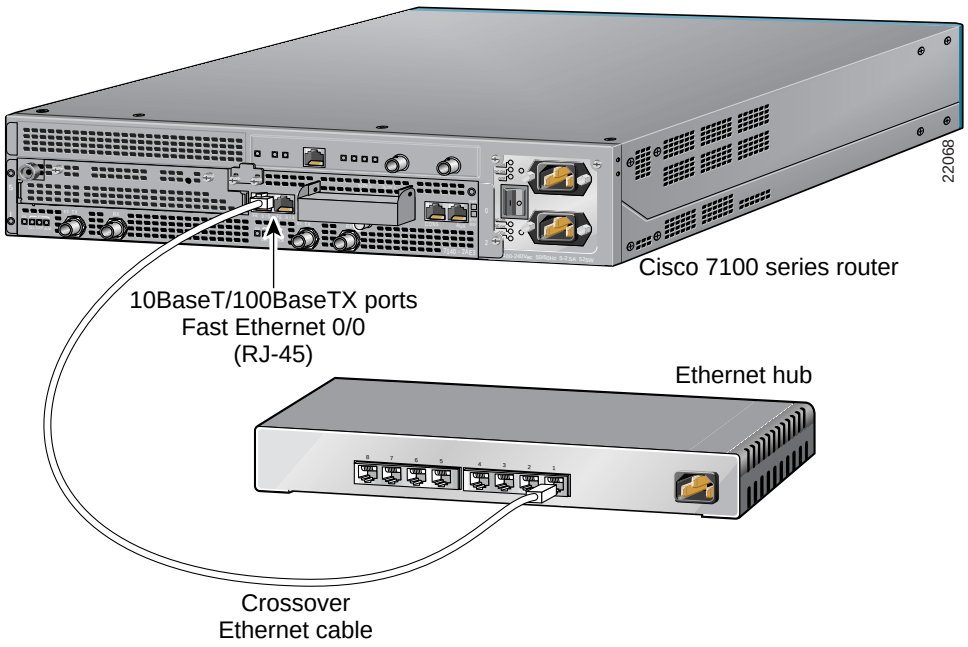


Attach the Grounding Lug

Note: Before you connect power or power on your router, we strongly recommend that you attach the grounding lug to the chassis grounding receptacles.

1. Locate the grounding lug and screws.
2. Use the wire stripper to strip one end of the 6-AWG wire approximately 0.75 inch (19.05 mm).
3. Insert the 6-AWG wire into the wire receptacle on the grounding lug.
4. Use the crimping tool to carefully crimp the wire receptacle around the wire; this step is required to ensure a proper mechanical connection.
5. Insert the two screws through the holes in the grounding lug. Ensure that the grounding lug does not interfere with other router hardware.
6. Use a Phillips screwdriver to carefully tighten the screws until the grounding lug is held firmly to the chassis. Do not overtighten the screws.
7. Connect the opposite end of the grounding wire to the appropriate grounding point at your site to ensure an adequate chassis ground.

3 Connect the Router to the Network



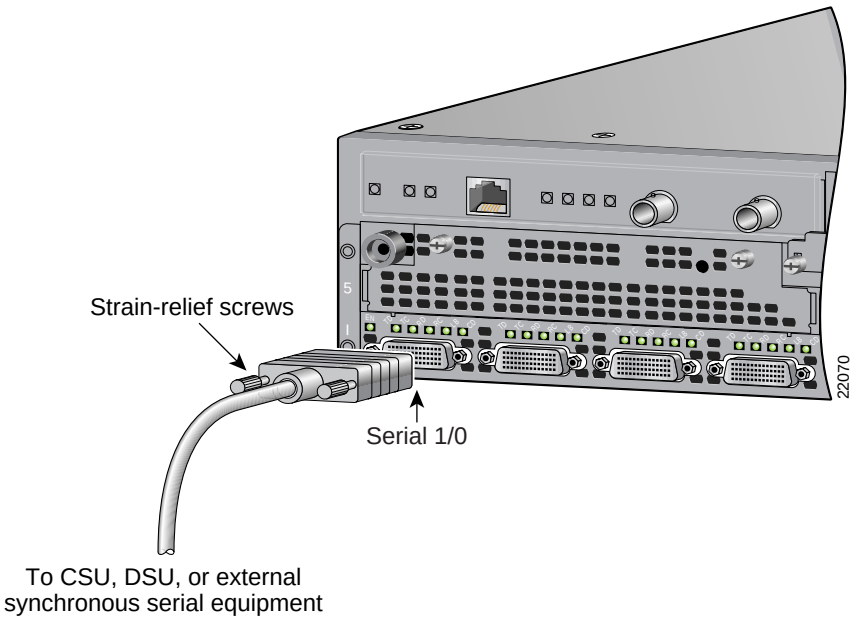
Connect the Fast Ethernet Ports

The 10BaseT/100BaseTX Fast Ethernet ports support IEEE 802.3 and IEEE 802.3u specifications for 10-Mbps and 100-Mbps transmission over unshielded twisted-pair (UTP) cables. These ports support autosensing and autonegotiation of the proper transmission mode with an attached device.

Note: Unless noted otherwise, all procedures apply to any Cisco 7100 series router.

1. Attach a standard straight-through or crossover Category 3 or Category 5 UTP cable directly to the RJ-45 receptacle on the router.
2. Attach the network end of the cable to an Ethernet hub or end station.

3 Connect the Router to the Network (continued)



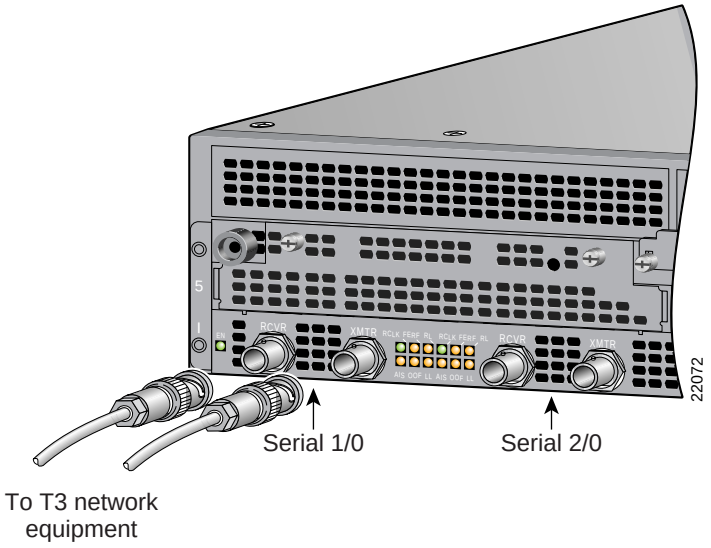
Connect the T1 Ports (Cisco 7120-4T1 only)

The four T1 ports operate at T1 (1.544-Mbps) and E1 (2.048-Mbps) speeds Each port uses an identical 60-pin D-shell receptacle that supports the following interface types:

- EIA/TIA-232
- V.35
- EIA/TIA-449
- X.21
- EIA-530

1. Attach the appropriate serial cable directly to the receptacle on the router and tighten the strain-relief screws.
2. Attach the network end of the serial cable to a DSU, CSU, DTE, or other external synchronous serial equipment and tighten the strain-relief screws.

3 Connect the Router to the Network (continued)



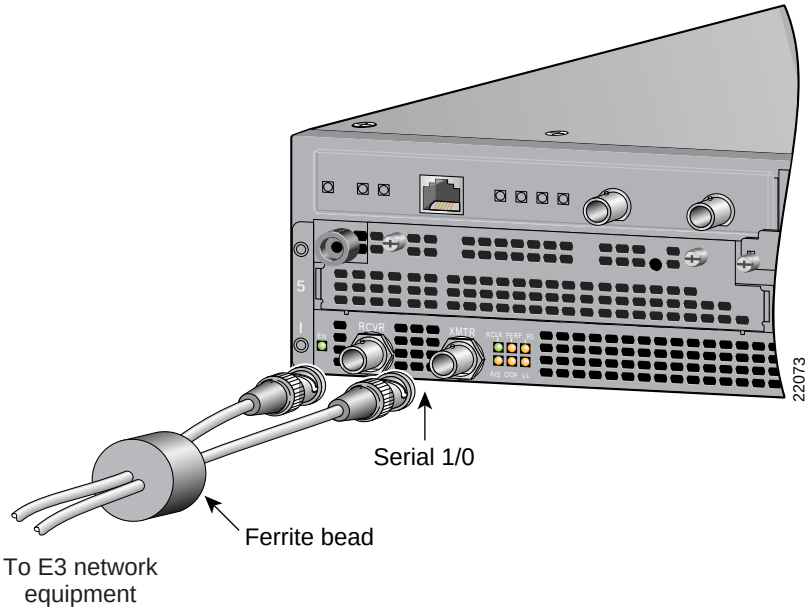
Connect the T3 Ports

The T3 port supports full-duplex operation at T3 (45-Mbps) speeds. Use a 75-ohm coaxial cable to connect to a T3 serial network. Serial cables conform to EIA/TIA-612 and EIA/TIA-613 specifications. The T3 serial ports on the router are considered to be DTE devices.

Note: The T3 ports support several types of integrated DSUs. For a listing of DSU feature compatibilities, refer to Appendix C, "Cable Specifications," in the Cisco 7100 Series VPN Router Installation and Configuration Guide.

1. Attach the appropriate 75-ohm coaxial cable directly to the receptacle on the router and tighten the strain-relief screws.
2. Attach the network end of the coaxial cable to the external synchronous serial equipment.

3 Connect the Router to the Network (continued)



Connect the E3 Ports

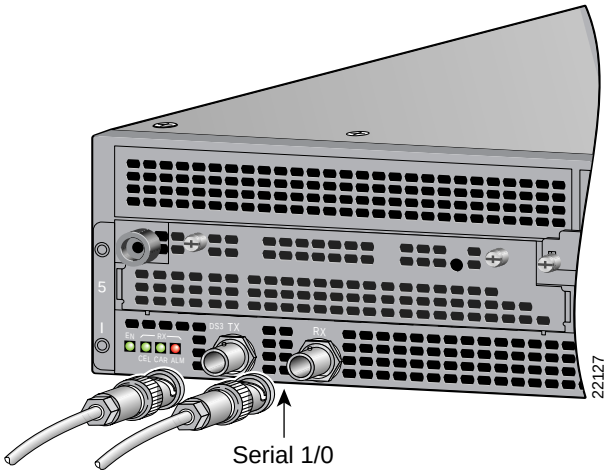
The E3 port supports full-duplex operation at E3 (34-Mbps) speeds. Use a 75-ohm coaxial cable to connect to an E3 serial network. Serial cables conform to EIA/TIA-612 and EIA/TIA-613 specifications. The E3 serial ports on the router are considered to be DTE devices.

Note: The E3 ports support several types of integrated DSUs. For a listing of DSU feature compatibilities, refer to Appendix C, "Cable Specifications," in the Cisco 7100 Series VPN Router Installation and Configuration Guide.

1. Attach the appropriate 75-ohm coaxial cable directly to the receptacle on the router and tighten the strain-relief screws.
2. Attach the network end of the coaxial cable to the external synchronous serial equipment.

Note: The E3 coaxial cable comes with an attached ferrite bead.

3 Connect the Router to the Network (continued)



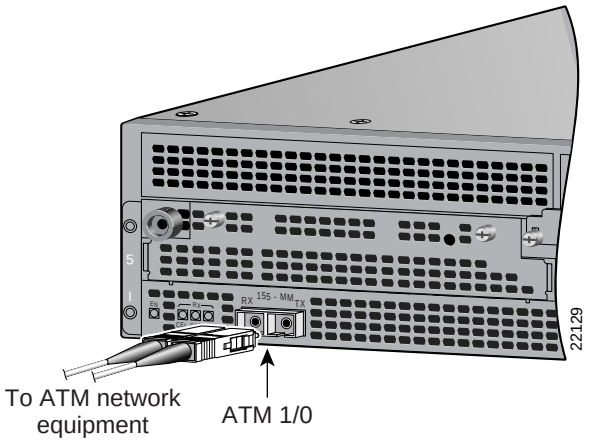
Connect the ATM T3 or E3 Ports

The T3 port supports full-duplex operation at T3 (45-Mbps) speeds. The E3 port supports full-duplex operation at E3 (34-Mbps) speeds. Use a 75-ohm coaxial cable to connect to a T3 or E3 ATM serial network. Serial cables conform to EIA/TIA-612 and EIA/TIA-613 specifications. The T3 and E3 serial ports on the router are considered to be DTE devices.

1. Attach a 75-ohm coaxial cable directly to the receptacle on the router.
2. Attach the network end of the cable to the external synchronous serial equipment.

Note: The E3 coaxial cable (not shown) comes with an attached ferrite bead.

3 Connect the Router to the Network (continued)



Connect the ATM SMI3 and MM3 Ports

The SMI3 (OC-3c/STM-1 single-mode intermediate reach) and MM3 (OC-3c/STM-1 multimode) ports provide an interface to ATM networks and transmit and receive data at rates of up to 155 Mbps bidirectionally. The SMI3 and MM3 ports connect to a SONET/SDH single-mode or multimode optical fiber cable. Use one duplex SC-type connector or two simplex SC-type connectors.

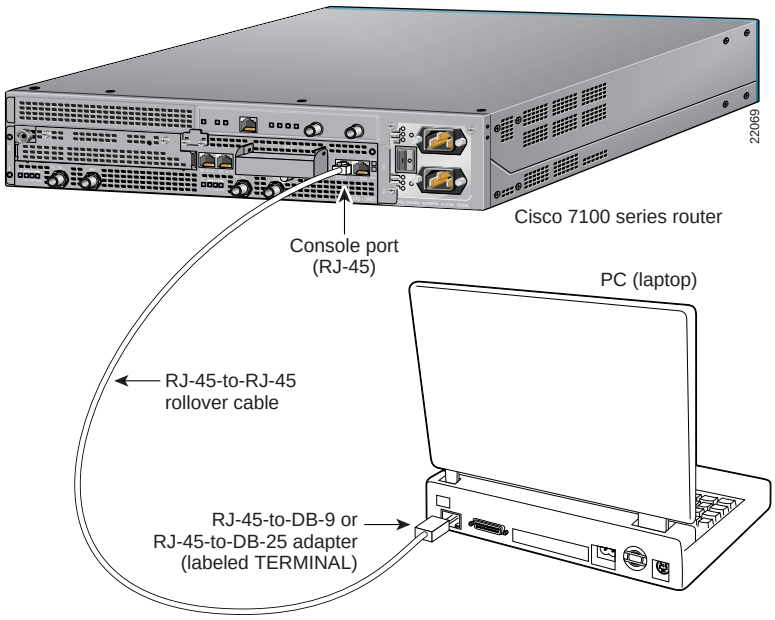
Warning Class 1 laser product.

Warning Because invisible laser radiation may be emitted from the aperature of the port when no fiber cable is connected, avoid exposure to laser radiation and do not stare into open apertures.

1. Attach the fiber-optic cable (either one duplex SC-type connector or two simplex SC-type connectors) directly to the receptacle on the router.
2. Attach the network end of the cable to an external DSU (an ATM network).

Note: For information on SONET specifications for fiber-optic transmissions, power budget, and power margins for multimode and single-mode transmissions, refer to Appendix C, "Cable Specifications," in the Cisco 7100 Series VPN Router Installation and Configuration Guide.

3 Connect the Router to the Network (continued)



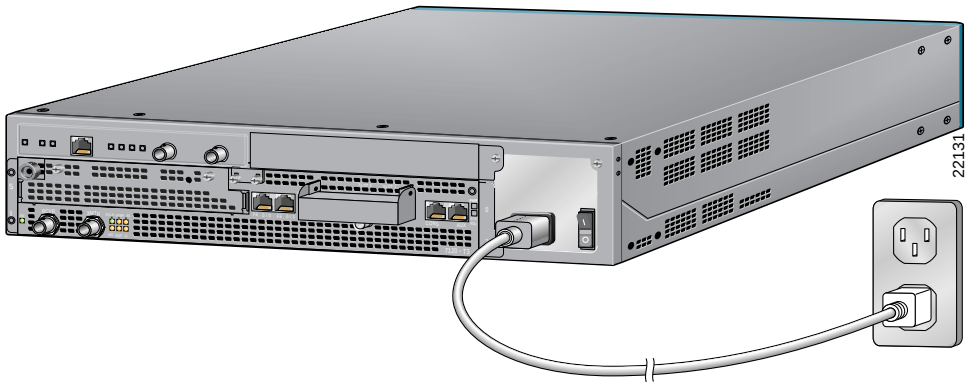
Connect the Console Port

Use the console terminal for local administrative access to the router.

1. Attach the appropriate cable (RJ-45 rollover cable and an RJ-45-to-DB-25 or RJ-45-to-DB-9 adapter) directly to the receptacle on the router. The adapters provided are labeled TERMINAL. Other types of adapters are not included.
2. Attach the other end of the cable to a terminal or PC.
3. Configure the terminal or PC terminal emulation software for 9600 baud, 8 data bits, no parity, and 2 stop bits.

Note: Refer to the "Connecting the Console Port and Auxiliary Port" section in *Chapter 3, "Installing Cisco 7100 Series Routers," in the* Cisco 7100 Series VPN Router Installation and Configuration Guide.

4 Connect the Power



Connect the Cisco 7120 Series AC Power Supply

The power supply is a four-output switching power supply with power factor correction and regulated outputs.

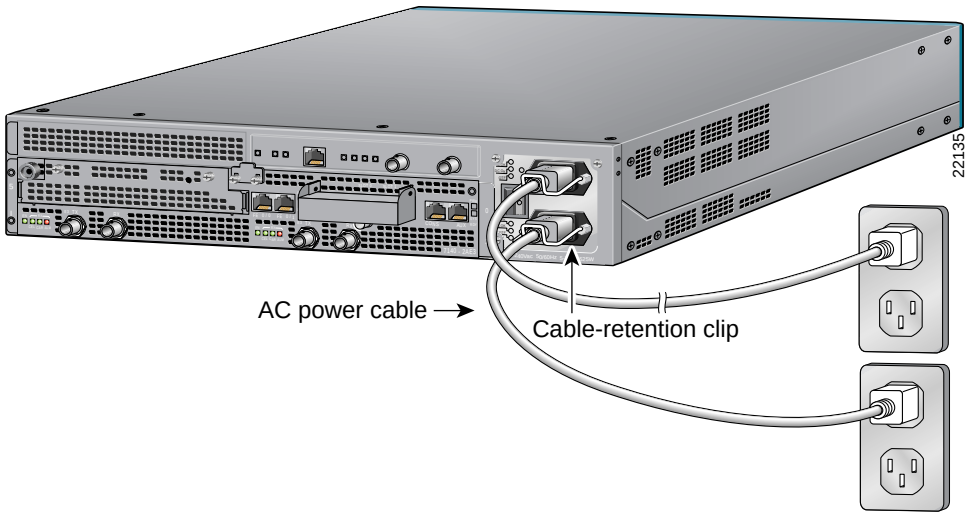
Warning Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available.

Warning The AC power supply has double pole/neutral fusing.

Warning The plug-socket combination must be accessible at all times because it serves as the main disconnecting device.

1. At the rear of the router, check that the power switch is in the off (O) position.
2. Connect one end of the power cord to the power connector on the rear of the router.
3. Connect the other end of the power cord to the power outlet.

4 Connect the Power (continued)



Connect the Cisco 7140 Series Dual AC Power Supply

The power supply is a four-output switching power supply with power factor correction and regulated outputs.

Note: For additional AC power cable strain relief, secure the cable to the power supply handle by inserting a nylon cable tie through the hole in the handle and around the cable.

1. At the rear of the router, check that the power switch is in the off (O) position.
2. Slide the cable-retention clip up, away from the AC receptacle, and plug in the power cable.
3. Secure the cable in the power supply AC receptacle by sliding the cable-retention clip down until it fits around the connector. The cable-retention clip provides strain relief for the AC power cable.
4. Plug the AC power supply cable into the AC power source.

Note: For full redundancy, plug the second AC power cord into a separate power source.

5 Start the System

Check Conditions Prior to System Startup

Check the following conditions before you start your router:

- Any port adapter or service module is securely inserted in its slot.
- All network interface cables are connected.
- A Flash Disk or Flash memory card is installed in its PC Card slot.
- The power cable is connected (for dual power supplies, the cable-retention clip is secured).
- The console terminal is connected and powered on.

Start the System

1. At the rear of the router, place the power switch on the power supply in the on (|) position. The green power LED on the router goes on.
2. Listen for the fans; you should immediately hear them operating.
3. During the boot process, observe the system LEDs. The LEDs on most of the fixed interfaces and port adapters go on and off in irregular sequence.
4. Observe the initialization process. When the system boot is complete (a few seconds), the network processor begins to initialize the interfaces. During this initialization, the LEDs on each port behave differently (most flash on and off). When initialization is complete, the enabled LED on each interface goes on.

Note: For more information on LEDs, refer to the "System LEDs and Reset Button" section in Chapter 1, "Cisco 7100 Series Product Overview," in the Cisco 7100 Series VPN Router Installation and Configuration Guide.

5 Start the System (continued)

Use the Setup Facility

This section provides a sample of a basic router configuration using the **setup** facility. The output from the **setup** facility varies depending on the Cisco 7100 series model you are installing. It does not contain a complete example of all possible features that can be used by the various interfaces.

Note: For information the defaults settings for the various interfaces, and procedures on how to use autoinstall or global configuration mode to configure the router, refer to Chapter 4, "Performing a Basic Startup Configuration," in the Cisco 7100 Series VPN Router Installation and Configuration Guide.

1 Power on the router. After startup, the console screen displays a script and a system banner similar to the following. When you see this information, you have successfully booted your router.

```
Restricted Rights Legend

Use, duplication, or disclosure by the Government is
subject to restrictions as set forth in subparagraph
(c) of the Commercial Computer Software - Restricted
Rights clause at FAR sec. 52.227-19 and subparagraph
(c) (1) (ii) of the Rights in Technical Data and Computer
Software clause at DFARS sec. 252.227-7013.

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           San Jose, California 95134-1706


Cisco Internetwork Operating System Software
IOS (tm) EGR Software (c7100-P-M), Release Version 12.0(19990204:220751)
[biff-bigrock.sync 122]
Copyright (c) 1986-1999 by cisco Systems, Inc.
Compiled Mon 08-Feb-99 11:26 by biff
Image text-base:0x60008900, data-base:0x609D2000
cisco 7140 (EGR) processor with 90112K/73728K bytes of memory.
R7000 CPU at 262Mhz, Implementation 39, Rev 1.0, 256KB L2, 2048KB L3 Cache
4 slot midplane, Version 0.1
```

5 Start the System (continued)

```
Last reset from power-on
X.25 software, Version 3.0.0.
2 FastEthernet/IEEE 802.3 interface(s)
2 ATM network interface(s)
125K bytes of non-volatile configuration memory.

8192K bytes of Flash PCMCIA card at slot 1 (Sector size 128K).
8192K bytes of Flash internal SIMM (Sector size 256K).
```

2 Enter **yes** or press **Return** to enter the initial configuration dialog:

```
--- System Configuration Dialog ---
Would you like to enter the initial configuration dialog? [yes/no]: yes
At any point you may enter a question mark '?' for help.
Use ctrl-c to abort configuration dialog at any prompt.
Default settings are in square brackets '[]'.

Basic management setup configures only enough connectivity
for management of the system, extended setup will ask you
to configure each interface on the system
```

3 Enter **yes** or press **Return** to see the current interface summary:

```
First, would you like to see the current interface summary? [yes]: yes
Any interface listed with OK? value "NO" does not have a valid configuration

Interface            IP-Address      OK? Method  Status   Protocol
FastEthernet0/0      unassigned      NO  unset   up       up
FastEthernet0/1      unassigned      NO  unset   up       up
ATM1/0               unassigned      NO  unset   down     down
ATM2/0               unassigned      NO  unset   down     down
```

Note: The example shows a router at first-time startup; that is, nothing is configured. The type of interfaces vary depending on the type of Cisco 7100 series router you are using and the type of modular port adapter installed in the router.

5 Start the System (continued)

4 Enter router host name, the enable secret password, enable password, and the virtual terminal password:

```
Configuring global parameters:
  Enter host name [Router]: sanjose

  The enable secret is a password used to protect access to
  privileged EXEC and configuration modes. This password, after
  entered, becomes encrypted in the configuration.
  Enter enable secret: barney

  The enable password is used when you do not specify an
  enable secret password, with some older software versions, and
  some boot images.
  Enter enable password: betty

  The virtual terminal password is used to protect
  access to the router over a network interface.
  Enter virtual terminal password: fred
```

5 Enter **yes** or press **Return** to accept SNMP management; enter **no** to refuse it:

```
Configure System Management? [yes/no]: no
  Configure SNMP Network Management? [yes]: no
```

Note: The Simple Network Management Protocol (SNMP) is the most widely supported open standard for network management. It provides a means to access and set configuration and run-time parameters of routers and communication servers. SNMP defines a set of functions that can be used to monitor and control network elements.

6 Enter **yes** or press **Return** to configure IP routing and select an interior routing protocol:

```
Configure IP? [yes]: yes
  Configure IGRP routing? [yes]: yes
    Your IGRP autonomous system number [1]: 15
  Configure CLNS? [no]: no
```

Note: Choose which protocols to support on your interfaces. For IP-only installations, you can accept the default values for most of the questions. In most cases, you use IP routing. If you are using IP routing, you must also select an interior routing protocol. You can specify only one of two interior routing protocols to operate on your system using setup: Interior Gateway Routing Protocol (IGRP) or Routing Information Protocol (RIP).

5 Start the System (continued)

7 Configure the Fast Ethernet LAN port in slot 0. Use your own addresses and subnet mask at the setup prompts. Consult with your network administrator for this information.

```
Configuring interface parameters:
Do you want to configure FastEthernet0/0 interface? [yes]: yes
  Use the 100 Base-TX (RJ-45) connector? [yes]: yes
  Operate in full-duplex mode? [no]: yes
  Configure IP on this interface? [yes]: yes
    IP address for this interface: 10.0.0.0
    Subnet mask for this interface [255.0.0.0]:
    Class A network is 10.0.0.0, 8 subnet bits; mask is /8

Do you want to configure FastEthernet0/1 interface? [yes]: no
```

Note: Many of the interface LEDs do not go on until you have configured them. To verify correct operation of each interface, complete the first-time startup procedures and configuration, and then refer to the LED descriptions in Chaper 1, "Cisco 7100 Series VPN Router Product Overview" in the Cisco 7100 Series VPN Router Installation and Configuration Guide *to check the status of the interfaces.*

8 Configure the ATM port in slot 1. Use your own addresses and subnet mask at the setup prompts. Consult with your network administrator for this information.

```
Do you want to configure ATM1/0 interface? [yes]: yes
  Configure IP on this interface? [yes]: yes
    IP address for this interface: 10.0.0.10
    Subnet mask for this interface [255.0.0.0]:
    Class A network is 10.0.0.10, 8 subnet bits; mask is /8

Do you want to configure ATM2/0 interface? [yes]:no
```

9 Configure the synchronous serial port in slot 4. Use your own addresses and subnet mask at the setup prompts. Consult with your network administrator for this information.

```
Do you want to configure Serial4/0 interface 3/0 [yes]: yes
Configure IP on this interface? [yes]: yes
    IP address for this interface: 10.1.1.20
    Number of bits in subnet field [0]:
    Class A network is 10.1.1.0, 0 subnet bits; mask is /24
```

5 Start the System (continued)

10 Review your configuration.

```
The following configuration command script was created:

hostname sanjose
enable secret 5 $1$gG.I$gc9JUfK2r6pIDL0vo3j191
enable password betty
line vty 0 4
password fred
no snmp-server
!
ip routing
no clns routing
!
interface FastEthernet0/0
media-type 100BaseX
full-duplex
ip address 10.1.1.20 255.0.0.0
!
interface FastEthernet0/1
shutdown
no ip address
!
interface ATM1/0
ip address 10.1.1.10 255.0.0.0
!
interface ATM2/0
shutdown
no ip address
!
router igrp 15
redistribute connected
network 1.0.0.0
!
end
```

5 Start the System (continued)

11 Save your settings to NVRAM by selecting option 2.

```
[0] Go to the IOS command prompt without saving this config.
[1] Return back to the setup without saving this config.
[2] Save this configuration to nvram and exit.

Enter your selection [2]: 2
```

Your router is now minimally configured and ready to use. You can use the **setup** command if you want to modify the parameters after the initial configuration. To perform more complex configurations, use the **configure** command.

Note: If the system does not complete each of the steps in the startup procedure, proceed to Chapter 5, "Troubleshooting the Installation," in the Cisco 7100 Series VPN Router Installation and Configuration Guide *for troubleshooting recommendations and procedures.*

For More Information

For information on additional interface configuration and specific system configurations, see the following publications:

- *Cisco 7100 Series VPN Configuration Guide* that shipped with your router. This document contains sample configurations.
- *Cisco 7100 Series VPN Router Installation and Configuration Guide*. This document contains detailed information on hardware installation, software setup, and troubleshooting guidelines.
- Modular configuration and modular command reference publications in the Cisco IOS software configuration documentation set that corresponds to the software release installed on your Cisco hardware.

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